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For: TEXTILE ELECTRONIC CONNECTION SYSTEM

1 1. A textile electronic connection system comprising:
2 a knitted, woven, or braided textile ribbon including integrated
3 transmission elements running the length of the ribbon to transmit data and/or power
4 along the length of the ribbon; and
5 a fastener for connecting the ribbon to another ribbon or device, the
6 fastener including:
7 a male portion, and
8 a female portion,
9 one of the male portion and the female portion on the ribbon, the
10 other of the male portion and the female portion on the other ribbon or device,
11 at least one of the male portion and the female portion including a
12 deformable element which releasably locks the male and female portions together; and
13 a connector integrated with the fastener portions and connected to the
14 integrated transmission elements to quickly allow connection and disconnection of the
15 ribbon to the other ribbon or device in a robust and reliable fashion.

1 2. The system of claim 1 in which the male portion of the fastener includes
2 deformable prongs and the female portion of the fastener includes recesses which receive
3 the prongs.

1 3. The fastener of claim 2 in which one portion of the connector is disposed
2 between the deformable prongs of the male portion of the fastener and the other portion
3 of the connector is disposed between the recesses of the female portion of the fastener.

1 4. The system of claim 3 further including a guide channel in the female
2 portion of the fastener about the connector portion for guiding the connector portions
3 together.

1 5. The system of claim 4 in which the guide channel is configured to accept
2 the female portion of the connector in only one orientation.

1 6. The system of claim 4 in which the connector is a USB connector.

1 7. The system of claim 4 in which the connector is a Lemo connector.

1 8. The system of claim 2 in which the connector includes conductive
2 portions of the prongs of the male fastener portion and corresponding conductive portions
3 of the female fastener portion.

1 9. The system of claim 8 further including a pin on the male portion of the
2 fastener and a receptacle in the female portion of the fastener which deformably accepts
3 the pin therein.

1 10. The system of claim 1 in which the male fastener portion includes a pair of
2 legs and the female fastener portion includes a pair of tubes which receive the legs.

1 11. The system of claim 10 further including conductive portions on the legs
2 and corresponding conductive portions on the tubes.

1 12. The system of claim 1 in which the fastener is a conductive snap and the
2 female fastener portion includes at least one recess and the male fastener portion includes
3 at least one extension deformably received in the recess.

1 13. The system of claim 12 further including at least one insulator dividing the
2 snap into at least two terminals.

1 14. The system of claim 13 in which there is one centrally located extension
2 and one centrally located recess and the insulator divides the recess into two terminals
3 and the extension into two corresponding terminals.

1 15. The system of claim 13 in which the male portion includes a
2 circumferential insulator dividing the male portion into inner and outer terminals.

1 16. The system of claim 15 in which the female portion includes a
2 circumferential insulator dividing the female portion into corresponding inner and outer
3 terminals.

1 17. The system of claim 16 in which the male portion includes a plurality of
2 extensions, at least two associated with different terminals.

1 18. The system of claim 17 in which the female portion includes a plurality of
2 recesses each of which accept an extension.

1 19. The system of claim 13 in which there are a plurality of circumferential
2 insulators coaxially aligned.

1 20. The system of claim 1 in which the connector includes a portion
2 overmolded onto the ribbon for added durability.

1 21. A textile electronic connection system comprising:
2 a male fastener portion including deformable prongs and one portion of a
3 connector between the deformable prongs; and
4 a female fastener portion including recesses which receive the prongs of
5 the male fastener portion, the female fastener portion includes the other portion of the
6 connector disposed between the recesses of the female fastener portion.

1 22. A textile electronic connection system comprising:
2 a male fastener portion including prongs with a conductive portion
3 thereon; and
4 a female fastener portion including recesses which receive the prongs of
5 the male portion and having corresponding conductive portions contacting the conductive
6 portions of the prongs of the male fastener portion to provide an electrical
7 interconnection between the male and female fastener portions.

1 23. A textile electronic connection system comprising:
2 a male fastener portion including legs with the conductive portion thereon;
3 and
4 a female fastener portion including tubes which receive the legs of the
5 male portion and having corresponding conductive portions contacting the conductive
6 portions of the legs of the male fastener portion to provide an electrical interconnection
7 between the male and female fastener portions.

1 24. A textile electronic connection system comprising:
2 a first knitted, woven, or braided textile ribbon including integrated
3 transmission elements running the length of the ribbon to transmit data and/or power
4 along the length of the ribbon;
5 a second knitted, woven, or braided textile ribbon including integrated
6 transmission elements running the length of the ribbon to transmit data and/or power
7 along the length of the ribbon; and
8 a fastener for physically and electrically interconnecting the two ribbons,
9 the fastener including:
10 a male fastener portion on connected to the first ribbon,
11 a female fastener portion on connected to the second ribbon,
12 at least one of the male fastener portion and the female fastener
13 portion including a deformable element which locks the male and female portions
14 together,
15 one connector portion integrated with the male fastener portion and
16 connected to the integrated transmission elements of the first ribbon, and
17 the other connector portion integrated with the female portion of
18 the fastener and connected to the integrated transmission elements of the second ribbon.

1 25. A textile electronic connection system comprising:
2 a first knitted, woven, or braided textile ribbon including integrated
3 transmission elements running the length of the ribbon to transmit data and/or power
4 along the length of the ribbon;
5 a second knitted, woven, or braided textile ribbon including integrated
6 transmission elements running the length of the ribbon to transmit data and/or power
7 along the length of the ribbon; and
8 a fastener for physically and electrically interconnecting the two ribbons,
9 the fastener including:
10 a male fastener portion overmolded onto one end of the first
11 ribbon,
12 a female fastener portion overmolded onto one end of the second
13 ribbon,
14 at least one of the male fastener portion and the female fastener
15 portion including a deformable element which locks the male and female portions
16 together,
17 one connector portion integrated with the male fastener portion and
18 connected to the integrated transmission elements of the first ribbon, and
19 the other connector portion integrated with the female portion of
20 the fastener and connected to the integrated transmission elements of the second ribbon.

1 26: A textile electronic connection system comprising:
2 a first knitted, woven, or braided textile ribbon including integrated
3 transmission elements running the length of the ribbon to transmit data and/or power
4 along the length of the ribbon;
5 a second knitted, woven, or braided textile ribbon including integrated
6 transmission elements running the length of the ribbon to transmit data and/or power
7 along the length of the ribbon; and
8 a fastener for physically and electrically interconnecting the two ribbons,
9 the fastener including:
10 a male fastener portion on connected to the first ribbon and
11 including a pair of deformable prongs,
12 a female fastener portion on connected to the second ribbon and
13 including a pair of recesses which receive the prongs,
14 one connector portion between the prongs of the male fastener
15 portion and connected to the integrated transmission elements of the first ribbon, and
16 the other connector portion between the recesses of the female
17 portion of the fastener and connected to the integrated transmission elements of the
18 second ribbon.

1 27. A textile electronic connection system comprising:
2 a first knitted, woven, or braided textile ribbon including integrated
3 transmission elements running the length of the ribbon to transmit data and/or power
4 along the length of the ribbon;
5 a second knitted, woven, or braided textile ribbon including integrated
6 transmission elements running the length of the ribbon to transmit data and/or power
7 along the length of the ribbon; and
8 a fastener for physically and electrically interconnecting the two ribbons,
9 the fastener including:
10 a male fastener portion on connected to the first ribbon and
11 including a pair of deformable prongs,
12 a female fastener portion on connected to the second ribbon and
13 including a pair of recesses which receive the prongs,
14 one connector portion on the prongs of the male fastener portion
15 and connected to the integrated transmission elements of the first ribbon, and
16 the other connector portion integrated with the female portion of
17 the fastener and connected to the integrated transmission elements of the second ribbon.

1 28. A textile electronic connection system comprising:
2 a first knitted, woven, or braided textile ribbon including integrated
3 transmission elements running the length of the ribbon to transmit data and/or power
4 along the length of the ribbon;
5 a second knitted, woven, or braided textile ribbon including integrated
6 transmission elements running the length of the ribbon to transmit data and/or power
7 along the length of the ribbon; and
8 a fastener for physically and electrically interconnecting the two ribbons,
9 the fastener including:
10 a male fastener portion on connected to the first ribbon including a
11 pair of legs,
12 a female fastener portion on connected to the second ribbon
13 including a pair of tubes which receive the legs of the male fastener portion,
14 one connector portion integrated with the legs of the male fastener
15 portion and connected to the integrated transmission elements of the first ribbon, and
16 the other connector portion integrated with the tubes of the female
17 portion of the fastener and connected to the integrated transmission elements of the
18 second ribbon.

1 29. A textile electronic connection system comprising:
2 a first knitted, woven, or braided textile ribbon including integrated
3 transmission elements running the length of the ribbon to transmit data and/or power
4 along the length of the ribbon;
5 a second knitted, woven, or braided textile ribbon including integrated
6 transmission elements running the length of the ribbon to transmit data and/or power
7 along the length of the ribbon; and
8 a fastener for physically and electrically interconnecting the two ribbons,
9 the fastener including:
10 a male snap member on the first ribbon including an extension,
11 a female snap member on the second ribbon including a recess
12 which receives the extension of the male snap member,
13 one connector portion integrated with the male snap member and
14 connected to the integrated transmission elements of the first ribbon, and
15 the other connector portion integrated with the female snap
16 member of the fastener and connected to the integrated transmission elements of the
17 second ribbon.

1 30. The system of claim 29 further including an insulator dividing the male
2 snap member into two terminals and an insulator dividing the female snap member into
3 two terminals.

1 31. A textile electronic connection system comprising:
2 a first knitted, woven, or braided textile ribbon including integrated
3 transmission elements running the length of the ribbon to transmit data and/or power
4 along the length of the ribbon;
5 a second knitted, woven, or braided textile ribbon including integrated
6 transmission elements running the length of the ribbon to transmit data and/or power
7 along the length of the ribbon; and
8 a fastener for physically and electrically interconnecting the two ribbons,
9 the fastener including:
10 a male snap portion on the first ribbon,
11 a female snap portion on the second ribbon,
12 the male snap portion divided into at least two terminals,
13 the female snap portion divided into at least two corresponding
14 terminals,
15 the terminals of the male snap portion connected to the integrated
16 transmission elements of the first ribbon, and
17 the terminals of the female snap portion connected to the integrated
18 transmission elements of the second ribbon.